



www.elsevier.com/locate/cryogenics

Index to Volume 42 (2002)

No. 1 (January) pp 1-72

No. 2 (February) pp 73-148

Nos. 3-4 (March-April) pp 149-264

No. 5 (May) pp 265-334

Nos. 6-7 (June July) pp 335-440

No. 8 (August) pp 441-516

No. 9 (September) pp 517-588

No. 10 (October) pp 589-660

No. 11 (Novermber) pp 661-734

No. 12 (December) pp 735-806

Article Index (titles in italics refer to Research and technical notes)

Number 1/January

Quench current improvement through shape modification of racetrack coil S.-K. Baik, M.-H. Sohn, R.-K. Ko, Y.-K. Kwon, K.-S. Ryu and Y .- S. Jo

Numerical analysis for steady-state two-dimensional heat transfer from a fat plate at one side of a duct containing pressurized He II H. Tatsumoto, K. Fukuda and M. Shiotsu 9

Numerical analysis for two-dimensional transient heat transfer from a flat plate at one-side of a duct containing pressurized He II H. Tatsumoto, K. Fukuda and M. Shiotsu 19

Peculiarities of transport current penetration in a composite superconductor taking into account different models of flux creep V.R. Romanovskii

Small helium bath cryopump for electron optical devices

P. Hanzelka, J. Dupák and V. Musilová

Temperature fluctuations in a solid-nitrogen cooled secondary frequency standard

J.G. Hartnett, M.E. Tobar, E.N. Ivanov and P. Bilski

Design of thermoacoustic refrigerators M.E.H. Tijani, J.C.H. Zeegers and A.T.A.M. de Waele

Construction and performance of a thermoacoustic refrigerator M.E.H. Tijani, J.C.H. Zeegers and A.T.A.M. de Waele

Thermal shunt for quick cool-down of two-stage closed-cycle refrigerator K. Uhlig

Number 2/February

³He/⁴He dilution refrigerator with pulse-tube refrigerator precooling

Ramp-rate limitation experiment using induced current method. Part 1: experimental results S. Jeong and M. Takayasu

Dc power system for mutual coupled large scale superconducting coils H. Chikaraishi, S. Yamada, S. Kitagawa, T. Satow, O. Motojima, S. Tanahashi, T. Satoh, H. Niwa

and T. Haga Vibration-free 5 K sorption cooler for ESA's Darwin mission J.F. Burger, H.J.M. ter Brake,

H. Rogalla and M. Linder Reversible and irreversible effects of strain on the critical current density of a niobium-tin superconducting

D.M.J. Taylor, S.A. Keys and D.P. Hampshire 109

Closed cycle cooling of infrared detectors to 250 mK

R.S. Bhatia, S.T. Chase, W.C. Jones, B.G. Keating, A.E. Lange, P.V. Mason, B.J. Philhour and G. Sirbi 113

Maximum attainable performance of pulse tube refrigerators P.C.T. de Boer

Measurement of helium temperatures by TVO-sensors under magnetic

Yu.P. Filippov and V.G. Shabratov 127

Discussion on refrigeration cycle for regenerative cryocoolers G. Chen, Z. Gan and Y. Jiang

Optimization and thermodynamic understanding of conduction-cooled Peltier current leads X.C. Xuan, K.C. Ng, C. Yap and

H.T. Chua 141

Liquid helium cryostat for target cooling B.V. Elkonin 147

Numbers 3-4/March-April

Special issue on superconducting generator in Japan S. Akita 149

Progress of technology for superconducting generator T. Nitta

Summary of development of 70 MW class model superconducting gen-

- erator—research and development of superconducting for electric power application L. Oishi and K. Nishijima 157
- Development of superconducting generator having highly stabilized superconducting field winding—70 MW class superconducting generator

Y. Yasaka, K. Yamaguchi, R. Shiobara, M. Takahashi and I. Oishi 169

Research and development of slow response type 70 MW class superconducting generator with high-current density superconductors S. Maeda, K. Shimohata, I. Kodera and A. Izumi 175

Development of 70 MW class superconducting generator with quick-response excitation K. Miyaike, T. Kitajima and T. Ito 183

Field test of 70 MW class superconducting generator K. Hasegawa and Y. Imai

Development of a highly reliable helium refrigeration system—R&D of a highly reliable helium refrigeration system (conventional type)

M. Ikeuchi, H. Yanagi and A. Machida 199

Development of a highly reliable helium refrigeration system—R&D of a highly reliable helium refrigeration system (oil-free type)

H. Asakura, N. Saji, S. Yoshinaga, T. Ishizawa, M. Ikeuchi, H. Yanagi, Y. Hirao and K. Kitagawa 203

Performance of the inertance pulse tube

P.C.T. de Boer 209

Influence of buffer on resonance frequency of thermoacoustic engine G.B. Chen, J.P. Jiang, J.L. Shi, T. Jin, K. Tang, Y.L. Jiang, N. Jiang and Y.H. Huang 223

A "permanent" high-temperature superconducting magnet operated in thermal communication with a mass of solid nitrogen B.J. Haid, H. Lee, Y. Iwasa, S.-S. Oh, Y.-K. Kwon and K.-S. Ryu 229

Acoustic quality factor of aluminium and selected aluminium alloys from 50 mK to 300 K W. Duffy Jr. 245

Using magnetic levitation to produce cryogenic targets for inertial fusion energy, experiment and theory

energy: experiment and theory

D. Chatain and

V.S. Nikolayev 253

Number 5/May

Low-temperature tensile strength of the ITER-TF model coil insulation system after reactor irradiation K. Bittner-Rohrhofer, K. Humer and H.W. Weber 265

The maximum temperature difference and polar characteristic of two-stage thermoelectric coolers *X.C. Xuan, K.C. Ng, C. Yap and H.T. Chua* 273

The study on the critical temperature, composition, and microstresses in a Nb₃Sn layer N. Kozlenkova, A. Shikov,

V. Pantsyrnyi and

A. Vorobieva 279
On cycle-averaged pressure in a G-M type pulse tube refrigerator G.Q. Lu and P. Cheng 287

Cryogen-free HTS coil placed in a heat-exchange gas O.P. Anashkin, V.E. Keilin, I.A. Kovalev, A.V. Krivykh, I.I. Akimov and A.K. Shikov 295

The unified strain and temperature scaling law for the pinning force density of bronze-route Nb₃Sn wires in high magnetic fields N. Cheggour and D.P. Hampshire 299

Analysis of the effect of Nb₃Sn strand bending on CICC superconductor performance N. Mitchell 311

Valve timing effect on the cooling performance of a 4 K pulse tube cooler L.M. Qiu and G. Thummes 32

Numbers 6-7/June-July

Japan–Korea Joint Workshop 2001 on Applied Superconductivity and Cryogenics K. Noto and S.-H. Kim 335 Overview of R&D activities on applications of superconductivity to power apparatuses in Japan O. Tsukamoto and S. Akita 337

Research and development of superconducting cable in Super-ACE project T. Nakatsuka, A. Kikuchi, Y. Ozawa and K. Ueda 345

Current status of SMES in Korea K.C. Seong, H.J. Kim, S.W. Kim, J.W. Cho, Y.K. Kwon, K.S. Ryu, I.K. Yu and S.Y. Hahn 351

Designs and analyses of flywheel energy storage systems using high- T_c superconductor bearings T.H. Sung, S.C. Han, Y.H. Han, J.S. Lee, N.H. Jeong, S.D. Hwang and S.K. Choi 357

Stability of fault current limiter with conduction cooled Bi2223 screen

K. Sasaki, C. Nishizawa and T. Onishi 363

Study of the mechanical heat generation inside the inner vessel installed with a superconducting coil

H. Seino, M. Kurihara, T. Herai and E. Suzuki 371

Development of Bi-2223 HTS tape and its application to coil and current leads

S.S. Oh, H.S. Ha, D.W. Ha, H.M. Jang, C. Park, K.J. Song, Y.K. Kwon and K.S. Ryu 377

Fabrication of low cost YBCO coated conductors using Ag-clad Hastelloy substrates

Y. Ma, K. Watanabe, S. Awaji and M. Motokawa 383

Reduction of radial magnetic fields in HTS solenoids with different constraint conditions

J.-H. Lee, J. Kang, D.-S. Kim, W. Nah, I.-H. Park and J. Joo 387 All Japan efforts on fundamental

materials technology developments for HTS applications Focusing on R&D of coated conductors

Y. Tokunaga, T. Izumi and Y. Shiohara 393

Study of thermal and cooling load for KSTAR thermal shield design D.-L. Kim, S. Cho, S.-H. Kim, M. Kyon, G.-S. Lee, K.-S. Kim, and

M. Kwon, G.-S. Lee, K.-S. Kim and Y.-M. Noh 399

- Counter flow cooling characteristics with liquid nitrogen for superconducting power cables M. Furuse, S. Fuchino and N. Higuchi 405
- Influence of bubble size and flow velocity on AC electrical breakdown characteristics of

S.-H. Kim, J.-M. Jeong, Y.-S. Kim, C.-O. Kim and S.-M. Baek 411

- Surface flashover characteristics in liquid nitrogen for application of superconducting paneake coils S.-H. Kim, S.-M. Baek, Y.-S. Kim, S.-Y. Chung and J.-M. Joung 415
- The effect of operating parameters in the Stirling cryocooler S.J. Park, Y.J. Hong, H.B. Kim, D.Y. Koh, J.H. Kim, B.K. Yu and K.B. Lee 419
- A study on the linear compressor characteristics of the Stirling cryocooler

D.-Y. Koh, Y.-J. Hong, S.-J. Park. H.-B. Kim and K.-S. Lee 427

Experimental results on V-M type pulse tube refrigerator W. Dai, Y. Matsubara and H. Kobayashi 433

Number 8/August

Editorial 441

Studies on a sealed-cell lambda-point device for use in low temperature thermometry

P. Lin, Y. Mao, L. Yu, Q. Zhang and C. Hong 443

Thermoelastic analysis of cracked woven GFRP laminates at cryogenic temperatures

T. Takeda, Y. Shindo, F. Narita and S. Kumagai 451

Comparative evaluation of erbium and lead regenerator materials for low temperature cryocoolers T.W. Wysokinski, J.A. Barclay, K.A. Gschneidner Jr., V.K. Pecharsky and A.O. Pecharsky 463

Effect of self-field and current nonuniformity on the voltage-temperature characteristic of the ITER central solenoid insert coil by numerical calculations

A. Nijhuis, H.G. Knoopers, Yu. Ilyin, A. Godeke, B. ten Haken and H.H.J. ten Kate 469

- Two-dimensional model for tapered pulse tubes Part 3: unsteady components of second-order mass flux and temperature H.C. Park, E.S. Jeong and S. Jeong 485
- Reduction of heat leak in cryogenic system using Peltier current leads Y. Hasegawa, K. Sato, H. Okumura, K. Nakamura, S. Yamaguchi and K. Mivake 495

Modified Roebuck compression device for cryogenic refrigeration system of superconducting rotating machine S. Jeong and J.-H. Jung

Thermoacoustic oscillation in channels of the pressurized He II H. Kobayashi, Y. Suganuma, H. Yoshida, Y. Matsubara and A. Tominaga 509

Number 9/September

Development of low-noise high value chromium silicide resistors for cryogenic detector applications M. Jhabvala, R.S. Babu, C. Monroy, M.M. Freund and C.D. Dowell 517

Experimental investigation of transient nonlinear phenomena in an annular thermoacoustic prime-mover: observation of a double-threshold

G. Penelet, E. Gaviot, V. Gusev, P. Lotton and M. Bruneau 527

On the numerical design of a new type of 4 K GM/PT hybrid refrigerators Y.L. Ju and L. Wang 533

Instabilities above critical current region in Bi-2223/Ag superconducting coils cooled by liquid nitrogen

F. Chovanec and P. Usak Large size optical windows for superfluid helium applications D. Celik and S.W. Van Sciver 547

Low-temperature thermal properties of polypropylene

M. Barucci, E. Gottardi, E. Olivieri, E. Pasca, L. Risegari and G. Ventura 551

Ac-losses of superconducting Bi-2223 tapes with two different time constants

C. Schmidt and L. Krempasky 557 ³He/⁴He dilution refrigerator precooled by Gifford-McMahon cooler II.

Measurements of the vibrational heat leak

K. Uhlig

Dynamic simulation of one-stage Oxford split-Stirling cryocooler and comparison with experiment Z. Cun-quan, W. Yi-nong, J. Guo-Lin, L. Dong-yu and X. Lie 577

Number 10/October

Identification of the effect of grain size on levitation force of well-textured YBCO bulk superconductors W.M. Yang, L. Zhou, Y. Feng, P.X. Zhang, C.P. Zhang, Z.M. Yu, X.D. Tang, R. Nicolsky and R. Andrade Jr. 589

Comparison of two models of a double inlet miniature pulse tube refrigerator: Part A thermodynamics P. Nika and Y. Bailly 593

Comparison of two models of a double inlet miniature pulse tube refrigerator: Part B electrical analogy

Y. Bailly and P. Nika 605

Design analysis of a solid nitrogen cooled "permanent" high-temperature superconducting magnet system B.J. Haid, H. Lee, Y. Iwasa, S.-S. Oh, Y.-K. Kwon and K.-S. Ryu 617

Effects of relaxation in levitating superconductors B.M. Smolyak, G.N. Perelshtein and G.V. Ermakov 635

Experimental study of λ-phase transition induced by shock compression

Y. Ueta, K. Yanaka, M. Murakami, H. Nagai and H.S. Yang 645

Performance improvement of a twostage GM cryocooler by use of Er(Ni_{0.075}Co_{0.925})₂ magnetic regenerator material L. Trevisani, T. Kuriyama, F. Negrini, T. Okamura, Y. Ohtani, M. Okamura and M. Fabbri

Number 11/November

Fracture strength of flawed cylindrical pressure vessels under cryogenic temperatures T. Christopher, K. Sankarnarayana-

samy and B. Nageswara Rao

- Critical current test results of 13 T-46 kA Nb₃Al cable-in-conduit conductor
 - N. Koizumi, Y. Takahashi, Y. Nunoya, K. Matsui, T. Ando, H. Tsuji, K. Okuno, K. Azuma, A. Fuchs, P. Bruzzone and G. Vecsey 675
- Monolithic versus conventional packed bed second stage regenerator evaluation in a Gifford–McMahon cryocooler
 - T.W. Wysokinski, X. Xu and J.A. Barclay 691
- Mechanical behavior of the ITER TF model coil ground insulation system after reactor irradiation
 - K. Bittner-Rohrhofer, K. Humer, H. Filhunger, R.K. Maix and H.W. Weber 697
- Low-power cryocooler survey H.J.M. ter Brake and G.F.M. Wiegerinck 705

An experimental and numerical study of He II two-phase flow in the TESLA test facility Y. Xiang, J.G. Weisend II, M. Smith, B. Petersen, D. Sellmann, H. Lierl, S.W. Van Sciver and

Number 12/December

S. Wolff 719

- Development of superconducting and cryogenic technology in the Institute for Technical Physics (ITP) of the Research Center Karlsruhe
 - W. Goldacker, R. Heller, A. Hofmann, F. Hornung, K.P. Jüngst, W. Lehmann, A. Mack, H. Neumann,
 - A. Nyilas, B. Obst, Th. Schneider, A. Ulbricht and H. Wühl 735
- Magnetisation loss of BSCCO/Ag superconducting tape exposed

- to applied field with arbitrary angle
- J.J. Rabbers, O. van der Meer, B. ten Haken and H.H.J. ten Kate 771
- On minimizing the heat leak of current leads in cryogenic vacuum systems
 - X.C. Xuan, K.C. Ng, C. Yap and H.T. Chua 779
- Optimization of operating temperature in cryocooled HTS magnets for compactness and efficiency
 - H.-M. Chang, Y.S. Choi and S.W. Van Sciver 787
- On the temperature distribution in the counter flow heat exchanger with multicomponent non-azeotropic mixtures
- M.Q. Gong, E.C. Luo, J.F. Wu and Y. Zhou 795 Index to Volume 42 1

Author Index

Akimov, I.I., 295 Akita, S., 149, 337 Anashkin, O.P., 295 Ando, T., 675 Andrade Jr., R., 589 Asakura, H., 203 Awaji, S., 383 Azuma, K., 675

Babu, R.S., 517 Baek, S.-M., 411, 415 Baik, S.-K., 1 Bailly, Y., 593, 605 Barclay, J.A., 463, 691 Barucci, M., 551 Bhatia, R.S., 113 Bilski, P., 45 Bittner-Rohrhofer, K., 265, 697 Bruneau, M., 527 Bruzzone, P., 675

Burger, J.F., 97

Celik, D., 547 Chang, H.-M., 787 Chase, S.T., 113 Chatain, D., 253 Cheggour, N., 299 Chen, G., 133 Chen, G.B., 223 Cheng, P., 287 Chikaraishi, H., 89 Cho, J.W., 351 Cho, S., 399 Choi, S.K., 357 Choi, Y.S., 787 Chovanec, F., 543 Christopher, T., 661 Chua, H.T., 141, 273, 779 Chung, S.-Y., 415 Cun-quan, Z., 577

Dai, W., 433 de Boer, P.C.T., 123, 209 de Waele, A.T.A.M., 49, 59 Dong-yu, L., 577 Dowell, C.D., 517 Duffy Jr., W., 245 Dupák, J., 39

Elkonin, B.V., 147 Ermakov, G.V., 635 Fabbri, M., 653 Feng, Y., 589 Filippov, Yu.P., 127 Fillunger, H., 697 Freund, M.M., 517 Fuchino, S., 405 Fuchs, A., 675 Fukuda, K., 9, 19 Furuse, M., 405

Gan, Z., 133 Gaviot, E., 527 Godeke, A., 469 Goldacker, W., 735 Gong, M.Q., 795 Gottardi, E., 551 Gschneidner Jr., K.A., 463 Guo-Lin, J., 577 Gusev, V., 527

Ha, D.W., 377 Ha, H.S., 377 Haga, T., 89 Hahn, S.Y., 351 Haid, B.J., 229, 617 Hampshire, D.P., 109, 299 Han, S.C., 357 Han, Y.H., 357 Hanzelka, P., 39 Hartnett, J.G., 45 Hasegawa, K., 191 Hasegawa, Y., 495 Heller, R., 735 Herai, T., 371 Higuchi, N., 405 Hirao, Y., 203 Hofmann, A., 735 Hong, C., 443 Hong, Y.J., 419 Hong, Y.-J., 427 Hornung, F., 735 Huang, Y.H., 223 Humer, K., 265, 697 Hwang, S.D., 357

Ikeuchi, M., 199, 203 Ilyin, Yu., 469 Imai, Y., 191 Ishizawa, T., 203 Ito, T., 183 Ivanov, E.N., 45 Iwasa, Y., 229, 617 Izumi, A., 175 Izumi, T., 393

Jang, H.M., 377 Jeong, E.S., 485 Jeong, J.-M., 411 Jeong, N.H., 357 Jeong, S., 79, 485, 501 Jhabvala, M., 517 Jiang, J.P., 223 Jiang, N., 223 Jiang, Y., 133 Jiang, Y.L., 223 Jin, T., 223 Jo, Y.-S., 1 Jones, W.C., 113 Joo, J., 387 Joung, J.-M., 415 Ju, Y.L., 533 Jung, J.-H., 501 Jüngst, K.P., 735

Kang, J., 387 Keating, B.G., 113 Keilin, V.E., 295 Keys, S.A., 109 Kikuchi, A., 345 Kim, C.-O., 411 Kim, D.-L., 399 Kim, D.-S., 387 Kim, H.B., 419 Kim, H.-B., 427 Kim, H.J., 351 Kim, J.H., 419 Kim, K.-S., 399 Kim, S.-H., 335, 399, 411, 415 Kim, S.W., 351 Kim, Y.-S., 411, 415 Kitagawa, K., 203 Kitagawa, S., 89 Kitajima, T., 183 Knoopers, H.G., 469 Ko, R.-K., 1 Kobayashi, H., 433, 509 Kodera, I., 175 Koh, D.Y., 419 Koh, D.-Y., 427 Koizumi, N., 675 Kovalev, I.A., 295 Kozlenkova, N., 279

Krempasky, L., 557

Krivykh, A.V., 295 Kumagai, S., 451 Kurihara, M., 371 Kuriyama, T., 653 Kwon, M., 399 Kwon, Y.K., 351, 377 Kwon, Y.-K., 1, 229, 617

Lange, A.E., 113
Lee, G.-S., 399
Lee, H., 229, 617
Lee, J.-H., 387
Lee, J.S., 357
Lee, K.B., 419
Lee, K.-S., 427
Lehmann, W., 735
Lie, X., 577
Lierl, H., 719
Lin, P., 443
Linder, M., 97
Lotton, P., 527
Lu, G.Q., 287
Luo, E.C., 795

Ma, Y., 383 Machida, A., 199 Mack, A., 735 Maeda, S., 175 Maix, R.K., 697 Mao, Y., 443 Mason, P.V., 113 Matsubara, Y., 433, 509 Matsui, K., 675 Mitchell, N., 311 Miyaike, K., 183 Miyake, K., 495 Monroy, C., 517 Motojima, O., 89 Motokawa, M., 383 Murakami, M., 645 Musilová, V., 39

Nagai, H., 645 Nageswara Rao, B., 661 Nah, W., 387 Nakamura, K., 495 Nakatsuka, T., 345 Narita, F., 451 Negrini, F., 653 Neumann, H., 735 Ng, K.C., 141, 273, 779 Nicolsky, R., 589 Nijhuis, A., 469 Nika, P., 593, 605 Nikolayev, V.S., 253 Nishijima, K., 157 Nishizawa, C., 363 Nitta, T., 151 Niwa, H., 89 Noh, Y.-M., 399 Noto, K., 335 Nunoya, Y., 675 Nyilas, A., 735

Obst, B., 735 Oh, S.-S., 229, 617 Oh, S.S., 377 Ohtani, Y., 653 Oishi, I., 157, 169 Okamura, M., 653 Okamura, T., 653 Okumura, H., 495 Okuno, K., 675 Olivieri, E., 551 Onishi, T., 363 Ozawa, Y., 345

Pantsyrnyi, V., 279
Park, C., 377
Park, H.C., 485
Park, I.-H., 387
Park, S.J., 419
Park, S.-J., 427
Pasca, E., 551
Pecharsky, A.O., 463
Pecharsky, V.K., 463
Penelet, G., 527
Perelshtein, G.N., 635
Petersen, B., 719
Philhour, B.J., 113

Qiu, L.M., 327

Rabbers, J.J., 771 Risegari, L., 551 Rogalla, H., 97 Romanovskii, V.R., 29 Ryu, K.-S., 1, 229, 617 Ryu, K.S., 351, 377

Saji, N., 203 Sankarnarayanasamy, K., 661 Sasaki, K., 363 Sato, K., 495 Satoh, T., 89 Satow, T., 89 Schmidt, C., 557 Schneider, Th., 735 Seino, H., 371 Sellmann, D., 719 Seong, K.C., 351 Shabratov, V.G., 127 Shi, J.L., 223 Shikov, A., 279 Shikov, A.K., 295 Shimohata, K., 175 Shindo, Y., 451 Shiobara, R., 169 Shiohara, Y., 393 Shiotsu, M., 9, 19 Sirbi, G., 113 Smith, M., 719 Smolyak, B.M., 635 Sohn, M.-H., 1 Song, K.J., 377 Suganuma, Y., 509 Sung, T.H., 357 Suzuki, E., 371

Takahashi, M., 169 Takahashi, Y., 675 Takayasu, M., 79 Takeda, T., 451 Tanahashi, S., 89 Tang, K., 223 Tang, X.D., 589 Tatsumoto, H., 9, 19 Taylor, D.M.J., 109 ten Haken, B., 469, 771 ten Kate, H.H.J., 469, 771 ter Brake, H.J.M., 97, 705 Thummes, G., 327 Tijani, M.E.H., 49, 59 Tobar, M.E., 45 Tokunaga, Y., 393 Tominaga, A., 509 Trevisani, L., 653 Tsuji, H., 675 Tsukamoto, O., 337

Ueda, K., 345 Ueta, Y., 645 Uhlig, K., 67, 73, 569 Ulbricht, A., 735 Usak, P., 543

van der Meer, O., 771 Van Sciver, S.W., 547, 719, 787 Vecsey, G., 675 Ventura, G., 551 Vorobieva, A., 279

Wang, L., 533 Watanabe, K., 383 Weber, H.W., 265, 697 Weisend II, J.G., 719 Wiegerinck, G.F.M., 705 Wolff, S., 719 Wu, J.F., 795 Wühl, H., 735 Wysokinski, T.W., 463, 691 Xiang, Y., 719 Xu, X., 691 Xuan, X.C., 141, 273, 779

Yamada, S., 89 Yamaguchi, K., 169 Yamaguchi, S., 495 Yanagi, H., 199, 203 Yanaka, K., 645 Yang, H.S., 645 Yang, W.M., 589 Yap, C., 141, 273, 779 Yasaka, Y., 169 Yi-nong, W., 577 Yoshida, H., 509 Yoshinaga, S., 203 Yu, B.K., 419 Yu, I.K., 351 Yu, L., 443 Yu, Z.M., 589

Zeegers, J.C.H., 49, 59 Zhang, C.P., 589 Zhang, P.X., 589 Zhang, Q., 443 Zhou, L., 589 Zhou, Y., 795

Keywords

1st sound, 509 AC losses, 175, 345, 363 Ac-losses, 557 Accelerator, 147 Acoustic streaming, 527 Ag-clad Hastelloy substrates, 383 Air gap armature winding, 169 Aluminium, 661

Bi-2223, 377
Brayton cycle, 133
Brayton cycle (E), 705
Breakdown characteristics, 411
BSCCO/Ag tapes, 771
BSCCO tape, 387
Bubble, 411
Bubbling, 377
Buffer layer alignment, 393
Bulk superconductor, 589

Cable-in-conduit, 675 Cable-in-conduit conductor, 79 Carnot cycle, 133 Charging pressure, 419 Coated conductor, 393 Cold compressor, 203 Composite, 29 Composites, 451 Composition, 279 Conduction, 399 Conduction cool, 363 Cooler, 295 Cooling capacity, 419 Cooling system, 345 Counter flow cooling, 405 Counter flow heat exchanger, Critical current, 675 Critical current density, 299 Critical field, 299 Critical temperature, 279, 299 Cryocooler, 123, 209, 363 Cryogenic optimisation, 39 Cryogenic systems, 495 Cryopanel, 399 Cryopump, 39 Cryostat, 147, 351 Cryostats, 547 Current control, 89 Current decay, 377 Current distribution, 469

Current lead, 141, 377, 495 Current leads, 779 Current-voltage characteristic, 29 Current-voltage curves, 543 Cycle-averaged pressure, 287 Cylindrical vessels, 661

DC flow, 433 Dc power supply, 89 Delamination, 697 Delamination process, 265 Dilution refrigerator, 73, 569 Displacer, 433

Elastic stress intensity factor, 661 Electric power application, 157 Electrical analogy, 605 Energy storage, 357 Energy transport, 509 Erbium, 463 Expander, 433

Failure assessment diagram, 661
Failure pressure, 661
Fault current limiters, 363
Feature, 151
Fiber composites, 697
Fixed-point device, 443
Flow instabilities, 405
Flux creep, 29
Flux creep (C), 635
Flux pinning, 299
Flywheel, 357
Fractional temperature fluctuations, 45
Frequency matching, 223

Gifford-McMahon, 67, 113 Gifford-McMahon (E), 705 GM cooler, 569 GM-cryocooler, 463 GM cryocooler, 653, 691 GM/PT hybrid refrigerator, 533 Grain size, 589 Gravitational-wave detectors, 245

³He Systems, 113 He I, 127 He II, 127 He II-channel, 509 He II systems, pumps (E), 735 Heat-exchange gas, 295 Heat flows, 39 Heat leak, 141, 779 Heat reduction, 495 Heat transfer, 9, 19, 543, 787 Helium gas, 399 Helium refrigeration system, 199, 203 High T_c superconducting cable, 345 High T_c superconductors, 363, 411, 557, 787 High critical current density, 393 High magnetic field, 393 High performance HTS magnet, 387 High-temperature superconductors, 383 History of development, 151 HTS current lead, 351 HTS magnet, 229, 387, 617 Hybrid, 357

ICF, 253
IFE target, 253
Induced loop current, 79
Infrared detectors, 113
Initial cooling, 405
Instabilities, 543
Instrumentation, 127
Insulation, 265
ITER, 265, 675, 697
ITER model coils, 469

J-T neon refrigeration cycle, 501 Joule-Thomson Coolers, 97, 113 Joule-Thomson coolers (E), 705

Kapton, 265

λ-phase transition, 645 Lambda transition, 443 Levitation force, 589 LHD, 89 Linear compressor, 427 Liquid helium, 147
Liquid helium (B), 327
Liquid helium temperature, 533
Liquid nitrogen temperature, 393
LN₂, 411
Load map, 691
Load tests, 169
Local heat disturbance, 363
Low temperature thermometry, 443

Magnetic bearing, 357 Magnetic coupling, 89 Magnetic levitation, 253 Magnetic levitation (F), 635 Magnetic properties and materials, 463 Magnetic regenerator material, 653 Magnetisation loss, 771 Magneto-resistance, 127 Mass flux, 485 Maximum temperature difference, 273 Mean time between failure, Mechanical properties, 245, 265, 299, 451, 697 Melt growth, 589 Metals, 245 Miniature device, 593 Miniature pulse tube refrigerator, 605 Models, 593 Modified Roebuck compression device, 501 Monolithic, 691 Multicomponent non-azeotropic mixtures, 795

National project, 337 Nb₃Al, 675 Nb₃Sn cable-in-conduit conductors, 469 Niobium-tin, 109 Numerical codes, 469 Numerical simulation, 577 Numerical study, 533 n-value, 469

Oil free, 203 Operating frequency, 419, 427 Optical techniques, 547
Optimization and design, 605
Oscillating flow, 287
Overview, 337
Oxford split-Stirling cryocooler, 577

Pancake coil, 415 Peltier, 779 Peltier effect, 495 Performance, 59 Persistent-mode, 229 Persistent mode, 377, 617 Phase transitions, 9, 19 Pinch point, 795 Polar characteristic, 273 Powder-in-tube, 377 Power application, 735 Power applications, 191, 787 Power system stability, 183 Practical application, 157 Pulse tube, 123, 133, 209 Pulse tube (E), 327, 705 Pulse tube refrigeration, 223 Pulse-tube refrigerator, 73 Pulse tube refrigerator, 287, 433, 593 Pulse tube refrigerators, 485

Quench, 175, 411 Quick-response excitation, 183

R&D priority, 337 Radiation, 399, 779 Ramp-rate limitation, 79 REBa₂Cu₃O_{7-δ} (RE123) superconductor, 393 Reduction of radial magnetic field, 387 Refrigeration, 49, 59, 577 Refrigeration cycle, 133 Regenerator, 123, 463, 653, Regenerator efficiency, 605 Reliability, 199 RF applications, 719 Roebuck compression process, 501 Roebuck refrigerator, 501 Rotating electric machinery, Rotating field, 771

Scaling, 109 Shock compression, 645 Simulation, 399 Slow response type excitation, 175 SMES, 351 Solid nitrogen, 229, 617 Sorption coolers, 97, 113 Space cryogenics, 97 Spacer insulator, 415 State of art, 151 Steels, 661 Stirling (E), 705 Stirling cryocooler, 427 Strain, 109, 299 Structural materials, superconductors (A), 735 Structural supports, 451 Superconducting coil, 543 Superconducting field winding, 169 Superconducting field windings, 175 Superconducting generator, 151, 157, 169, 183 Superconducting generators, 175, 199 Superconducting joint, 377 Superconducting machine, 501 Superconducting magnet, Superconducting magnets, 127, 451 Superconducting magnets (F), Superconducting power applications, 337 Superconducting power cables, 405 Superconductive temperature sensor, 645 Superconductivity, 169 Superconductor, 29 Superconductors, 279, 299, 357, 469 Superconductors (A), 635 Superfluid helium, 9, 19, 645 Superfluid helium (He II), 547, Superfluid shock tube facility, 645 Surface cracks, 661

Surface flashover, 415

- Tapered pulse tubes, 485
 Temperature, 485
 Temperature distribution, 405, 795
 Temperature sensors, 127
 Temperature–entropy diagram, 141, 779
 Textured metal substrate, 393
 Theoretical results, 593
 Thermal shield, 399
 Thermal shunt, 67
 Thermoacoustic, 49, 59
 Thermoacoustic engine, 223
 Thermoacoustic instability, 527
- Thermoacoustic oscillation, 509
 Thermoacoustic prime-mover, 527
 Thermodynamic analysis, 123, 209
 Thermodynamics, 133, 787
 Thermoelectric cooler, 273
 Thermoelectric effect, 141
 Through-wall cracks, 661
 Time constant measurement, 557
 Titanium, 661
 Toroidal field coil, 675
- Transport current penetration, 29
 Two stage, 273
 Two-dimensional model, 485
 Two-phase flow, 719
 Unsteady second-order, 485
 V-M cryocooler, 433
 Valve timing, 327
 Vibrational heat leak, 569
 Voltage-current characteristics, 469
 YBCO, 383, 589

